

### **REMARKS**

By this amendment, claims 4 and 8 have been canceled. Accordingly, claims 1-2, 5-6, 11 and 13 are currently pending in the application, of which claims 1 and 5 are independent claims.

In view of the above amendments and the following Remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending objections and rejections for the reasons discussed below.

#### ***Claim Objection***

In the Office Action, claims 4 and 8 were objected to under 37 C.F.R. §1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claims 4 and 8 have been canceled. Accordingly, Applicants respectfully request withdrawal of the objection for claims 4 and 8.

#### ***Rejections Under 35 U.S.C. § 103***

Claims 1, 2, 4-6, 8, 11, and 13 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 6,391,137 issued to Matsushima ("Matsushima") in view of U.S. Patent No. 5,766,493 issued to Shin ("Shin") and U.S. Patent No. 6,908,638 issued to Ueda, *et al.* ("Ueda"). Applicants respectfully traverse this rejection for at least the following reasons.

To establish an obviousness rejection under 35 U.S.C. § 103(a), four factual inquiries must be examined. The four factual inquiries include (a) determining the scope and contents of the prior art; (b) ascertaining the differences between the prior art and the claims in issue; (c) resolving the level of ordinary skill in the pertinent art; and (d) evaluating evidence of secondary consideration. *Graham v. John Deere*, 383 U.S. 1, 17-18 (1966). In view of these four factors,

the analysis supporting a rejection under 35 U.S.C. 103(a) should be made explicit, and should “identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements” in the manner claimed. *KSR Int’l. Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, slip op. at 14-15 (2007).

First, the office action fails to establish the obviousness of the present invention because there is no reason to modify Matsushima “through routine experimentation,” as suggested by the examiner (see Office Action, page 4). Specifically, (1) the examiner relies on the present application’s disclosure as motive to modify Matsushima, and (2) Matsushima teaches away from the examiner’s purported modification.

The examiner’s modification of Matsushima to disclose the claimed thicknesses of the glass substrates is not sustainable. Specifically, Matsushima discloses that “the respective glass substrates 100a, 101a composing each liquid crystal display device are thinned so as to have a thickness of about 0.3 mm to 0.7 mm.” See Matsushima, col. 8 line 67 to col. 9, line 3 (emphasis added). The examiner concurs that Matsushima fails to disclose “etching the upper substrate to a thickness of about 100 micrometers or less, and etching the lower substrate to a thickness of about 100 micrometers or less” (emphasis added). See Office Action, page 4 (stating that “Matsushima does not expressly teach that the upper and lower substrates are etched to each have a thickness of 100 microns or less.”). However, the examiner then relies upon the teachings of Shin, namely, that “it is desirable to have the upper and lower glass substrates for forming a flat panel display be thin and light,” as a basis to conclude that it would have been obvious to “modify the method taught by Matsushima ... to optimize the resultant upper and lower glass substrate thickness to be 100 microns or less.” Office Action, page 4 (emphasis added). Applicants respectfully submit that this reason to modify Matsushima cannot be maintained for at least two reasons.

First, the examiner assumes without basis that the claimed substrate thickness of 100 micrometers or less provides the optimized substrate thickness. The only disclosure that offers that insight is the present application. See page 8, lines 13-16 of the specification. However, using the present application's disclosure as a reason to modify cited references is contrary to the MPEP, Chapter 2141.II(c) (stating that "[t]he references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention.").

Second, Matsushima teaches away from the examiner's proposed modification. "It is improper to combine references where the references teach away from their combination." MPEP, Chapter 2145.X.D.2 (citing to In re Grasselli, 713 F.2d 731, 743 (Fed. Cir. 1983)). Specifically, Matsushima discloses that "the thinned assembly of devices [according to the conventional art] is hard to handle and it is apt to break when it is pulled out from the etching tank." Matsushima, col. 3, lines 25-27. Even after Matsushima remedies this disadvantage of the conventional art by separating individual display devices prior to etching, Matsushima discloses a minimum substrate thickness of "about 0.3 mm." Col. 9, lines 2-3. While not explicitly disclosed by Matsushima, it can be concluded that Matsushima's disclosed minimum thickness of "about 0.3 mm" is established to avoid the disadvantages described above. Therefore, since Matsushima teaches away from an etched substrate thickness of less than "about 0.3 mm," it is improper to reject claims 1 and 5 on the basis of Matsushima as modified by Shin.

Second, the office action fails to establish the obviousness of the present invention because the modification of Matsushima, as proposed by the examiner, offers no reasonable expectation of success. While not explicitly disclosed by Matsushima, it can be concluded that Matsushima's disclosed lower bound thickness of "about 0.3 mm" is established to avoid the disadvantages described above. Further, since Matsushima has disclosed a minimum

thickness for performing Matsushima's invention, it can also be concluded that Matsushima's method for producing a display device would not function properly at even lower thicknesses. Moreover, according to the present application, "[i]f the thickness (T) of each of the final upper and lower substrates is less than or equal to 100  $\mu\text{m}$ , the final upper and lower substrates become flexible." Page 8, lines 13-14 of the specification. Matsushima offers no support that a liquid crystal display device produced by Matsushima's method could have flexible substrates. In fact, since Matsushima discloses a lower bound thickness significantly higher than this flexible substrate boundary, it can also be concluded that Matsushima seeks to avoid this possibility. Therefore, the examiner's purported modification begs the question: since thinner substrates are better according to Shin, why did Matsushima not disclose a minimum substrate thickness of "about 100 micrometers or less?" While Matsushima again fails to explicitly provide an answer to this question, it can be concluded that Matsushima's method offers no reasonable expectation of success with the "upper substrate [having] a thickness of about 100 micrometers or less, and ... the lower substrate [having] a thickness of about 100 micrometers or less."

Finally, even assuming *arguendo* that the references may be combined and a reasonable expectation of success exists, the combined references do not disclose or suggest all of the claim limitations. Specifically, the cited references, either alone or in combination, fail to disclose all features of claims 1 and 5. Claim 1 and claim 5 each recite, *inter alia*, "etching the upper substrate to a thickness of about 100 micrometers or less, and etching the lower substrate to a thickness of about 100 micrometers or less." The cited references fail to disclose or suggest at least these features.

Thus, Matsushima fails to disclose or suggest at least the above recited features of claims 1 and 5, and Shin and Ueda, individually or combined, fail to remedy the shortcomings of Matsushima with respect to claims 1 and 5. Accordingly, for at least these reasons, the cited

references, either alone or in combination, fail to disclose or suggest every limitation of claims 1 and 5.

Moreover, even assuming that the examiner has established the obviousness of the present invention, "obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention." MPEP, Chapter 2144.05.III (citing to In re Geisler, 116 F.3d 1465, 1471 (Fed. Cir. 1997)). Therefore, even assuming that the examiner has established the obviousness of the present invention by modifying Matsushima with the teachings of Shin, Matsushima's teaching away from an etched substrate thickness less than "about 0.3 mm" is sufficient to rebut the examiner's conclusion.

Further, even where there is an overlapping range, "Applicants can rebut ... obviousness based on overlapping ranges by showing the criticality of the claimed range." MPEP, Chapter 2144.05.III. "Criticality" may be shown by offering that "the claimed range achieves unexpected results relative to the prior art range." MPEP, Chapter 2144.05.III (citing to In re Woodruff, 919 F.2d 1575 (Fed. Cir. 1990)). As noted above, Matsushima offers no support for performing Matsushima's method to achieve flexible substrates that are achieved "[i]f the thickness (T) of each of the final upper and lower substrates is less than or equal to 100  $\mu$ m." Page 8, lines 13-14 of the specification. This would be sufficient to overcome a prima facie case if the ranges overlap. The conclusion here is even stronger because Matsushima's thickness range and the range recited in the present application's claims do not overlap.

Since the office action fails to establish the obviousness of the present invention, Applicants respectfully submit that independent claims 1 and 5, and all the claims that depend therefrom, are allowable over the cited references. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1, 2, 5-6, 11, and 13.

**CONCLUSION**

Applicants believe that a full and complete response has been made to the pending Office Action and respectfully submit that all of the stated objections and grounds for rejection have been overcome or rendered moot. Accordingly, Applicants respectfully submit that all pending claims are allowable and that the application is in condition for allowance.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative at the number below to expedite prosecution.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

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